Technology Opportunity
Glenn Research Center • Cleveland • Ohio
Technology Transfer & Partnership Office
TOP3–00208

Aero-Acoustic Propulsion Laboratory

Facility

The Aero-Acoustic Propulsion Laboratory (AAPL) is a world-class facility providing outstanding testing services in aircraft noise reduction, with an emphasis in engine nozzle and fan components. A large far-field arena is used at the Nozzle Acoustic Test Rig (NATR) to acquire fly-by and sideline acoustic data of nozzle concepts at simulated flight conditions up to Mach 0.30.

Facility Benefits

AAPL provides three state-of-the-art test rigs:

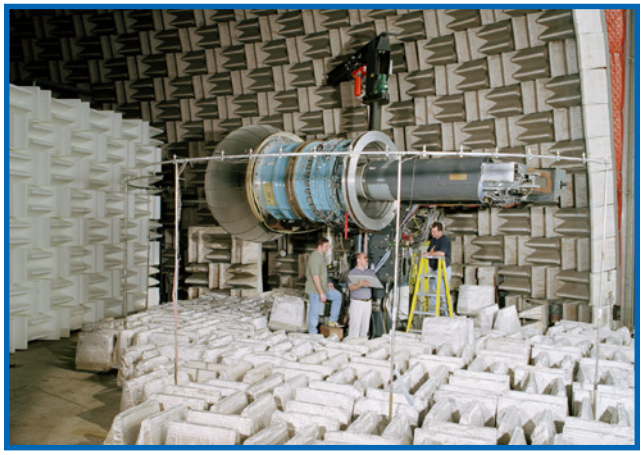
- NATR—
  supporting aircraft nozzle acoustic research
- Small Hot Jet Acoustic Rig (SHJAR)—
  supporting jet noise fundamental research
- Advanced Noise Control Fan (ANCF)—
  supporting fan acoustic research
- Free-jet acoustic tunnel simulating flight conditions up to Mach 0.30
- High Flow Jet Exit Rig (HFJER) used to simulate nozzle pressure and temperature conditions
- Large far-field acoustic measurement arena
- Simultaneous sideline and flyby acoustic data measurements
- Advanced diagnostic testing capabilities
- State-of-the-art control room
- In-house and private industry research programs
- Highly qualified staff of technicians, engineers, researchers, and operators

Commercial Applications

The dome provides an anechoic testing environment for acoustic measurements of aeropropulsion components

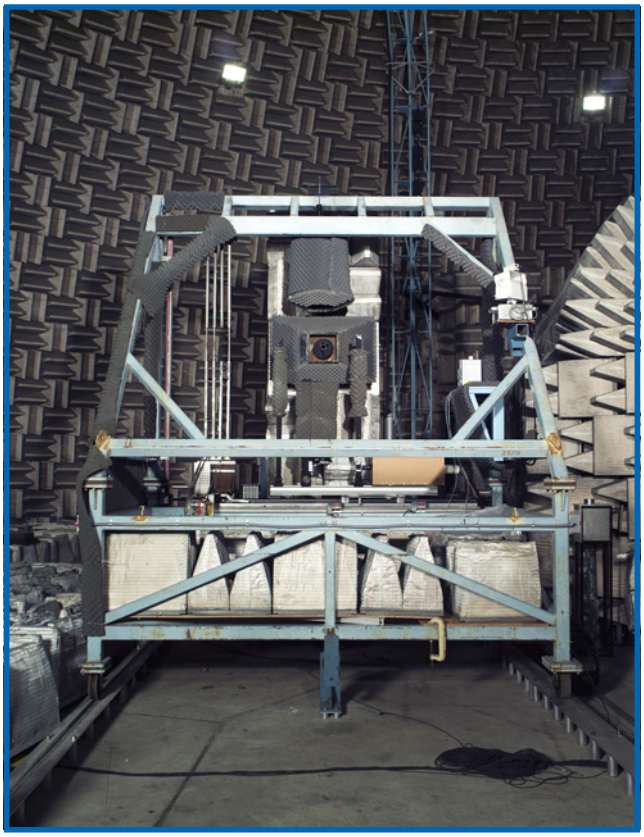
Programs and Projects Supported

- Quiet Aircraft Technology (QAT)
- Ultra-Efficient Engine Technology (UEET)
- Pulse Detonation Engine Test
- Low Emissions Alternative Power (LEAP) Program



Capabilities

AAPL	
Test section speed, Mach	0.10 to 0.35
Simulated alt., ft	Sea level
Test section Reynolds number/per ft	----------
Dynamic pressure, lbf/ft^2	NPR = 4.5 T = 1425° F
Test section total temperature, °R	Ambient
Auxiliary air supply At 40 psig At 150 psig At 450 psig Model exhaust	 ---------- 130lbm/s 30-lbm/s Heated
High-pressure air storage at 2600 psig, scf	----------
Fuels	Natural gas Gaseous H_2



Facility Testing Information

http://facilities.grc.nasa.gov

Contacts

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